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REMARKS

This amendment is responsive to the official action dated November 18, 2003.

Claims 1-3 were pending in the application. Claims 1-3 were rejected. No claims were allowed by the Examiner.

Claims 1-3 remain unchanged.

Accordingly, Claims 1-3 are currently pending.

I. REJECTION OF CLAIMS UNDER 35 USC §103

Claims 1-3 were rejected under 35 USC 103(a) as being unpatentable over US Patent No. 5,661,339 (Clayton) in view of US Patent No. 5,561,208 (Takahashi et al.). The Examiner has stated that Clayton discloses a method of manufacturing a structural frame including the steps of providing a base polymer matrix, net-shape molding the base matrix material into the shape of a structural frame, providing an electronic circuit board having heat generating components thereon, mounting the circuit board to the structural frame with the electronic components in thermal communication with the structural frame and dissipating the heat from the electronic components through the structural frame. The Examiner further stated that while Clayton does not disclose mixing a thermally conductive filler into the base matrix to form a material having a uniform distribution of the filler throughout the entire material, that Takahashi teaches polymer materials having a uniform distribution of filler therein and that the present invention is obvious in light of the combination of these references.

The references cited by the Examiner however are lacking in several critical elements as related to the present invention and therefore cannot render the present disclosure obvious. First, the Examiner has asserted that Clayton discloses mounting the circuit board in direct contact with and in thermal communication with the frame (Col. 6, lines 49-53). While the Examiner is correct in stating that the circuit board is in physical contact with the frame, the Applicant fails to locate the disclosure in Clayton relied upon by the Examiner that teaches thermal communication between the circuit board and the structural frame. There is no disclosure related to the use of the structural

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frame as a conduit to transfer heat from the circuit board. In fact, the structural frame is made from injection molded liquid crystal polymer with native properties that are considered to be thermally insulative. For this reason, the Clayton disclosure is silent regarding thermal communication between the frame and the circuit board. More specifically, this feature does not exist and is therefore not referred to in the Clayton reference. It is not until the Examiner viewed the present invention regarding the addition of fillers into the polymer base matrix that the Examiner engaged in hindsight reconstruction to impute the concept of thermal communication into the Clayton disclosure.

The Examiner then states that Clayton discloses that the assembly dissipates heat from the heat generating electronic component through the structural frame by relying on the disclosure at Col. 7, lines 47-50. However, the passage referred to by the Examiner discusses that the thermal convection may be improved by enhancing the surface area of the cover plate and not the structural frame. The cover plate and the structural frame are two distinct and separate elements of the disclosure. The cover plate is further defined as being a thin metal plate (Col. 5, line 51), not an injection molded polymer. Therefore the disclosure relied upon by the Examiner was selected from the properties of two distinct and separate elements of the disclosed device. First a structural frame of a non-thermally conductive polymer and second a thin metal cover. There is absolutely no disclosure within the Clayton reference that suggests, teaches or imputes that the structural frame be used as a heat dissipating structure. Nor is there any disclosure that the function of these two elements may be combined in any manner to create an integrated structural frame for the dissipation of heat generated by the electronic components mounted thereon.

The Examiner further states that in view of Takahashi it would have been obvious to fill the polymer structural frame in Clayton with conductive filler to arrive at the present invention. The Examiner refers to Col. 13, lines 19-40 for support of this assertion. Presumably, the Examiner is of the understanding that the reference to a side chain of 4-6 carbon atoms found in line 24 indicates the use of carbon fiber filler. In actuality, the disclosure refers to the use of an acrylate monomer having a chemical structure that

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includes an atomic structure having a side chain composition including 4-6 cross linked carbon atoms. The disclosure states that a monomer having this particular structure would be useful as a coating agent fro the reduction in shrinkage of a part using ultraviolet curing processes.

There is no disclosure relative to the loading of a polymer base matrix with a filler material to create a composition that is both injection moldable and includes inherent thermally conductive properties. If the Clayton and Takahashi references are combined the end product would include a structural frame having a polymer base matrix that did not shrink during ultraviolet curing operations. There is no possibility that the combination would result in a polymer matrix filled with a thermally conductive filler thereby rendering the present invention obvious.

Specifically, since there is no disclosure or teaching in either the Clayton or Takahashi references that suggests that they are combinable they cannot be combined to render the present invention obvious. Further since the combination of the two references does not disclose the present invention, one skilled in the art would not have the motivation to combine the references-to-arrive at the present invention. Thus the disclosures of Clayton and Takahashi teach away from such a combination under §103. Obviously, one skilled in the art that desired a thermally conductive injection molded polymer structural frame would not use the reduced shrinkage method provided in Takahashi to enhance the thermal conductivity of the structure disclosed in Clayton. Therefore, the references cited by the Examiner cannot be combined to render the present invention obvious and this basis for rejection is no longer maintainable. Reconsideration and withdrawal of this rejection is respectfully requested.

II. CONCLUSION

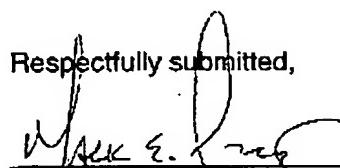
Accordingly, the Applicant asserts that all of the pending rejections regarding the claims of the present Application have been traversed and that the present amendment by complying with the requirements set forth by the Examiner has placed the application in condition for allowance. Therefore, the Applicant asserts that Claims 1-3 are in condition for allowance and the application ready for issue.

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Corresponding action is respectfully solicited.

PTO is authorized to charge any additional fees incurred as a result of the filing hereof or credit any overpayment to our account #02-0900.

Respectfully submitted,



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